cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

AGRONOMIC SPECIFICITIES IN AFRICA AND YIELD POTENTIAL

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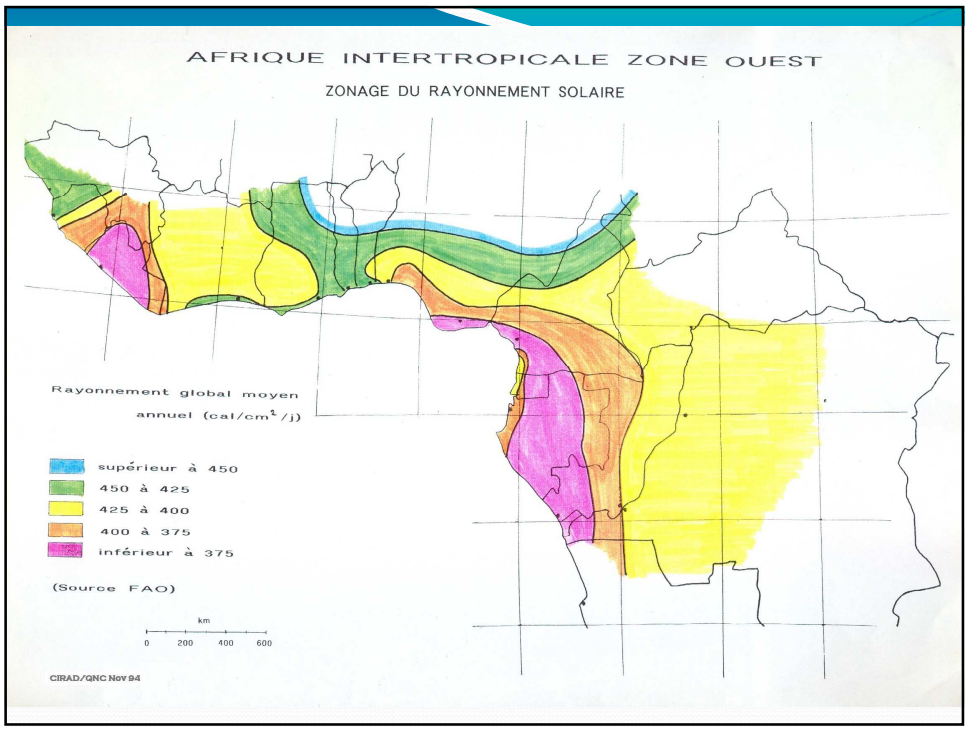
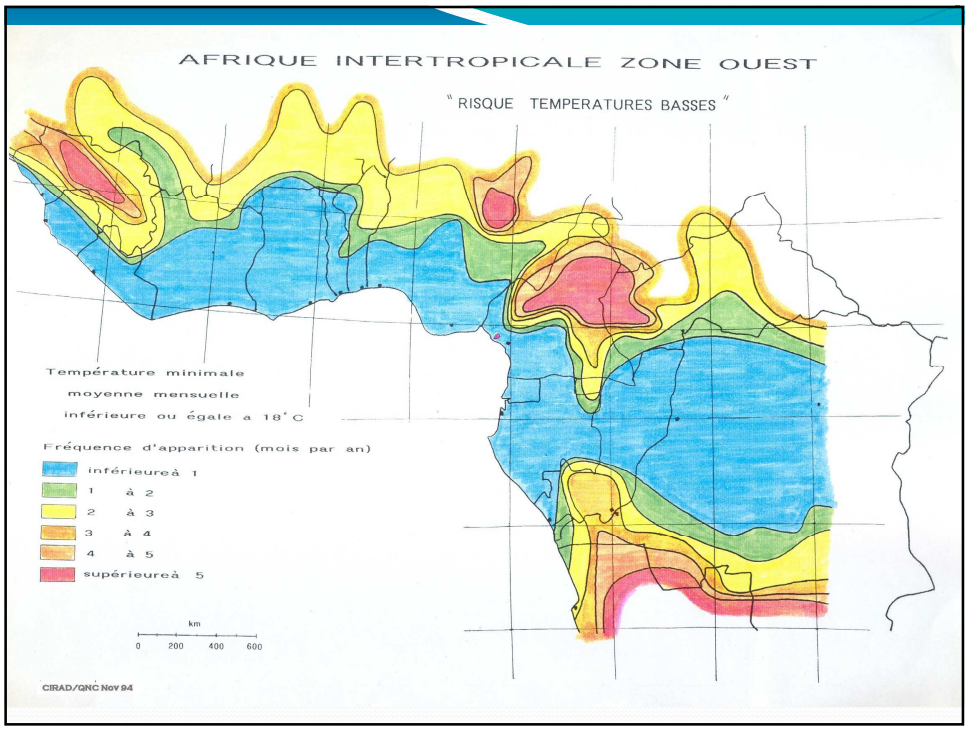
Oil palm requirements

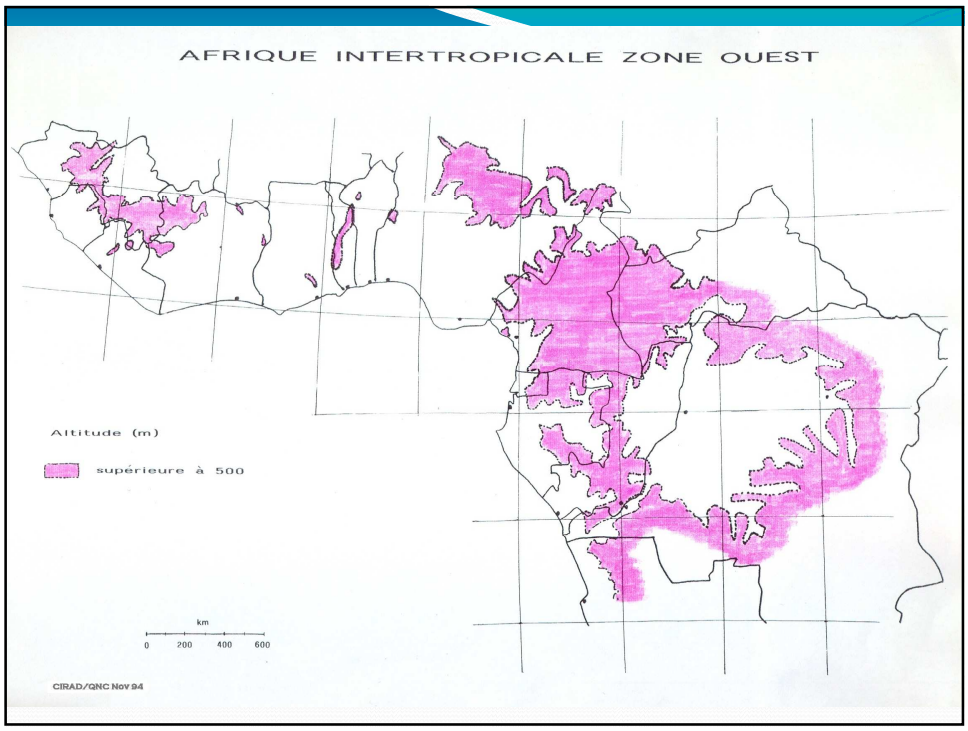
- sunshine: between 1500 and 1800 hours a year;
- temperature: most favourable annual mean: 26°C, with monthly means of minima > 18° C, and a daily minimum temperature > 15°C;
- humidity: maximum with a monthly mean > 75%;
- water supply: requirement is 150 mm every month. If rainfall + soil reserve is below this value a given month, palms suffer from water deficit;
- soils: best yields are obtained on class I soils: deep soils with good water retention capacity which are rich in nutrients.

West and Central Africa

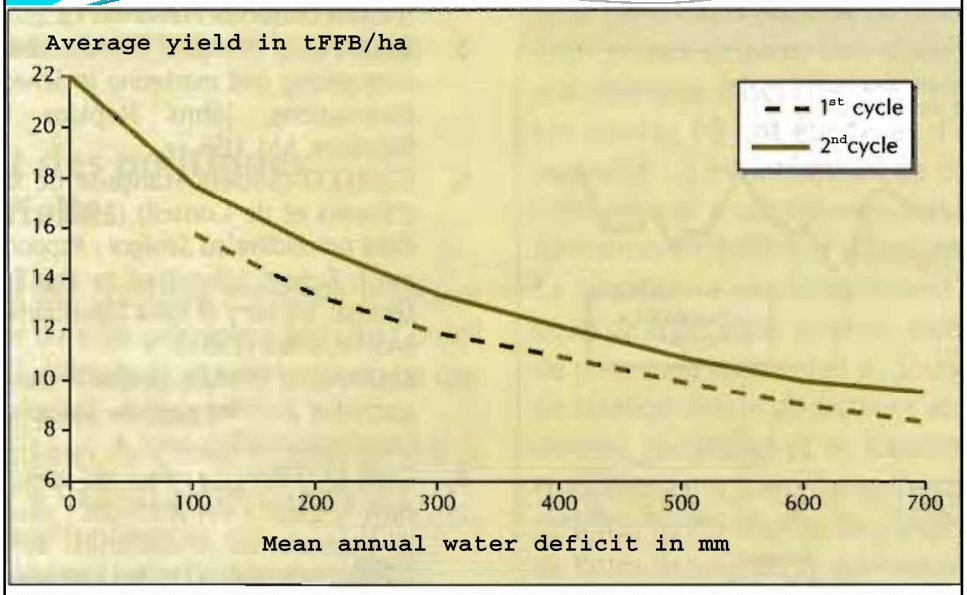
Agro-ecological conditions to meet requirements



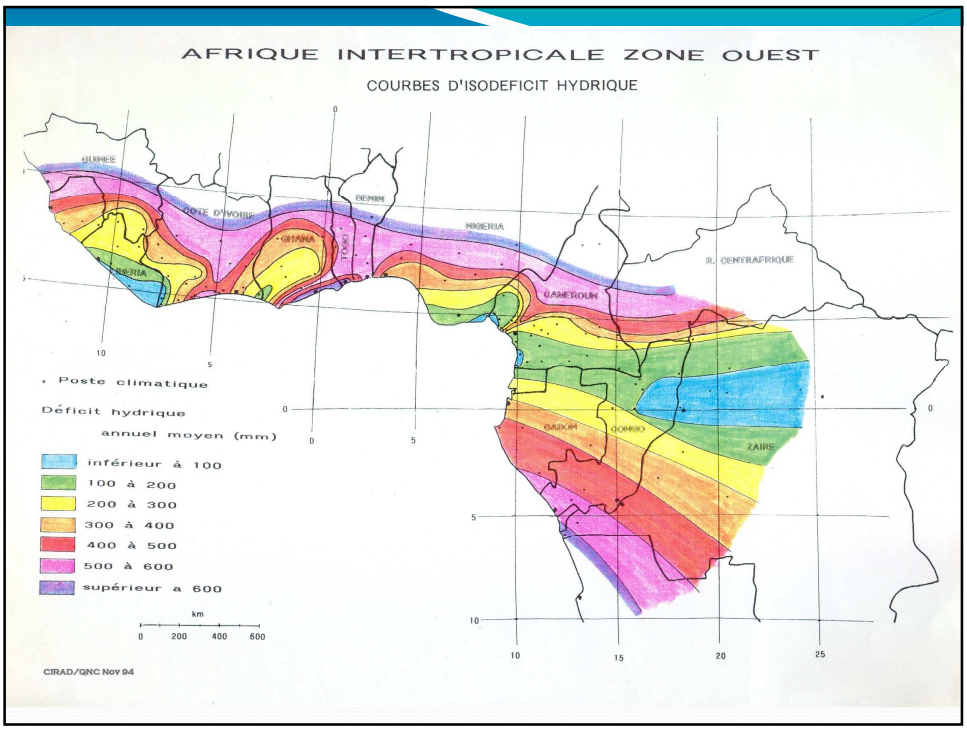

AFRIQUE INTERTROPICALE ZONE OUEST
" RISQUE TEMPERATURES BASSES "
Température minimale
moyenne mensuelle
inférieure ou égale a 18° C
Fréquence d'apparition (mois par an)
inférieureà 1
1 à 2
2 à 3
3 à 4
4 à 5
supérieureà 5
km
0 200 400 600
CIRAD/QNC Nov 94


AFRIQUE INTERTROPICALE ZONE OUEST
Altitude (m)
supérieure à 500
km
0 200 400 600
CIRAD/QNC Nov 94

Relation between water deficit and yield

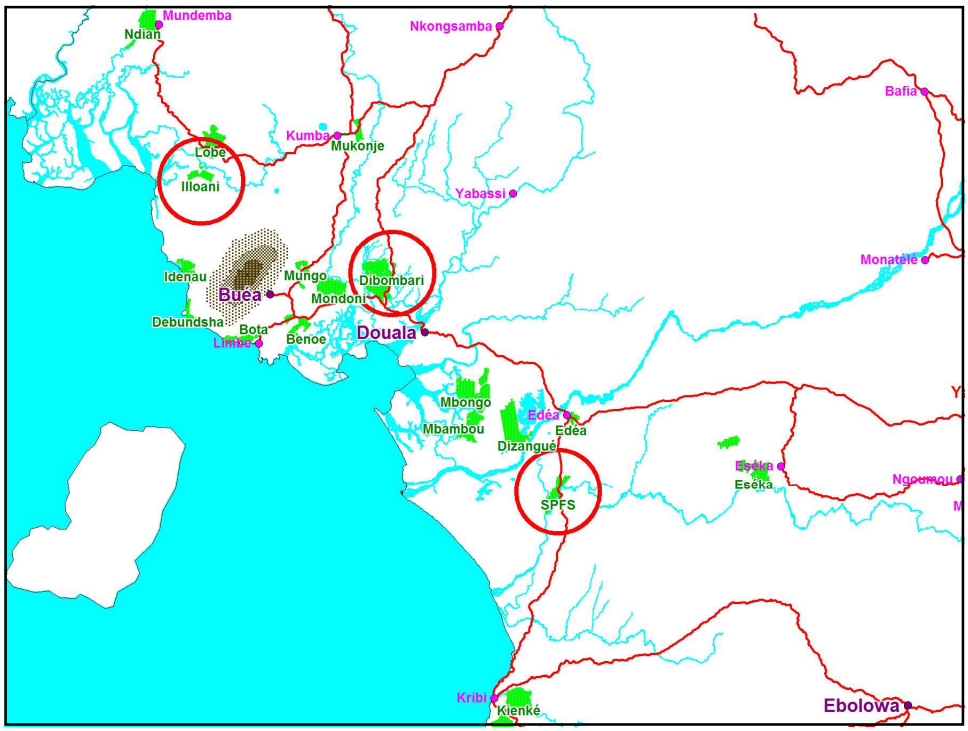


Relation deducted from results obtained in Ivory Coast (1996)

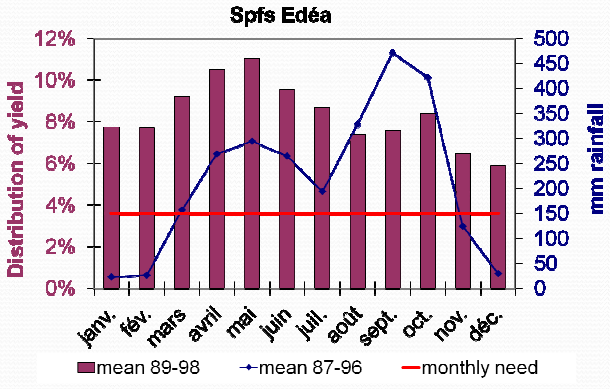


Water deficit

consequences on overall yield and monthly distribution



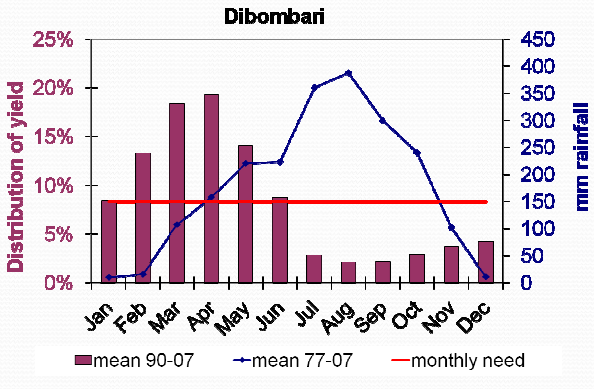
Yield distribution in Cameroon



Spfs V1

mm		days	rainfall	WF
	1977	138	2360	266
	1978	182	3151	290
	1979	154	2542	189
	1980	169	2119	195
	1981	215	2703	193
	1982	192	2542	169
	1983	161	2074	293
	1984	171	2973	188
	1985	182	2664	185
	1986	157	3000	225
	1987	131	2537	349
	1988	171	3170	217
	1989	138	2308	201
	1990	140	2474	275
	1991	158	2865	129
	1992	146	2093	232
	1993	124	2386	258
	1994	123	2595	250
	1995	128	2703	195
	1996	138	2858	252
	1997	140	2637	263
	1998	128	3282	364
	1999	112	3527	150
	2000	129	2495	137
	2001	114	1951	209
mean		**150**	**2640**	**227**

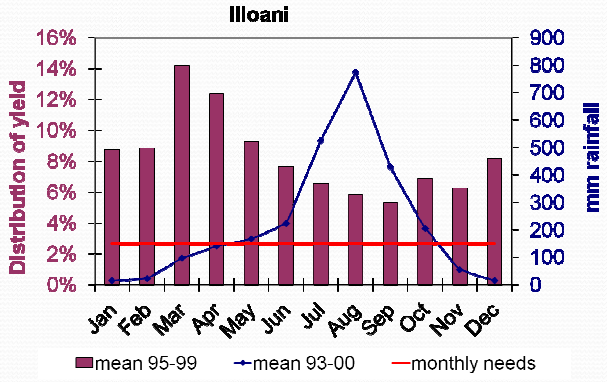
Yield distribution in Cameroon



Dibombari Nkapa

mm		days	rainfall	WD
	1977	110	2611	462
	1978	134	2212	413
	1979	137	2325	251
	1980	136	2325	288
	1981	124	2603	376
	1982	127	2334	328
	1983	132	2348	445
	1984	111	1692	298
	1985	110	1941	245
	1986	117	2166	320
	1987	110	2326	469
	1988	112	2031	290
	1989	111	2095	362
	1990	117	2124	483
	1991	104	1798	380
	1992	122	2314	419
	1993	111	1846	380
	1994	141	2091	218
	1995	138	2116	294
	1996	142	1959	375
mean		**122**	**2163**	**355**

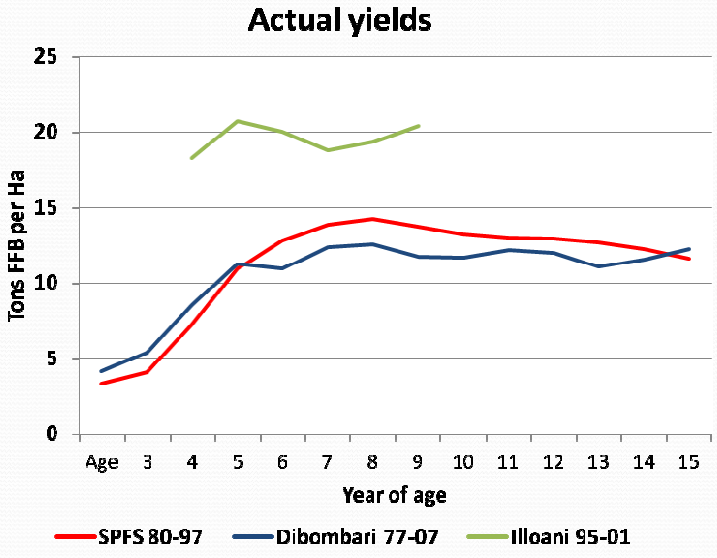
Yield distribution in Cameroon



Illoani

mm		days	rainfall	WD
	1993	114	2821	235
	1994	139	3078	225
	1995	103	1672	454
	1996	136	2969	346
	1997	138	2755	339
	1998	102	3094	427
	1999	142	2025	451
	2000	139	2958	455
mean		**127**	**2671**	**367**

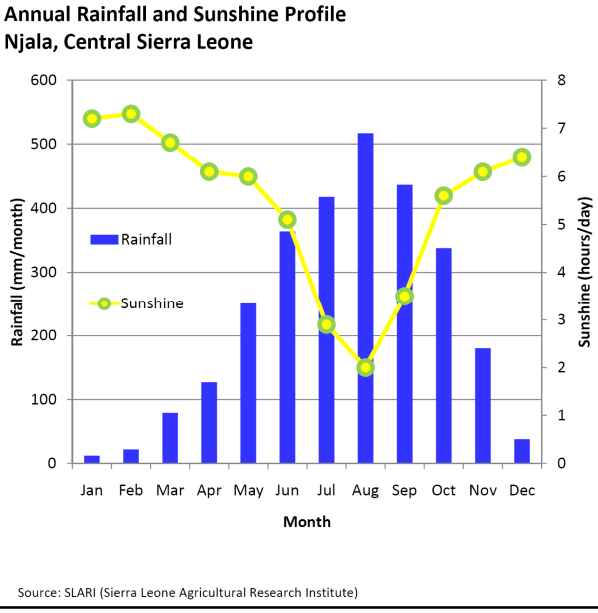
Yield comparison of the three estates



Comparison with Asia and South America

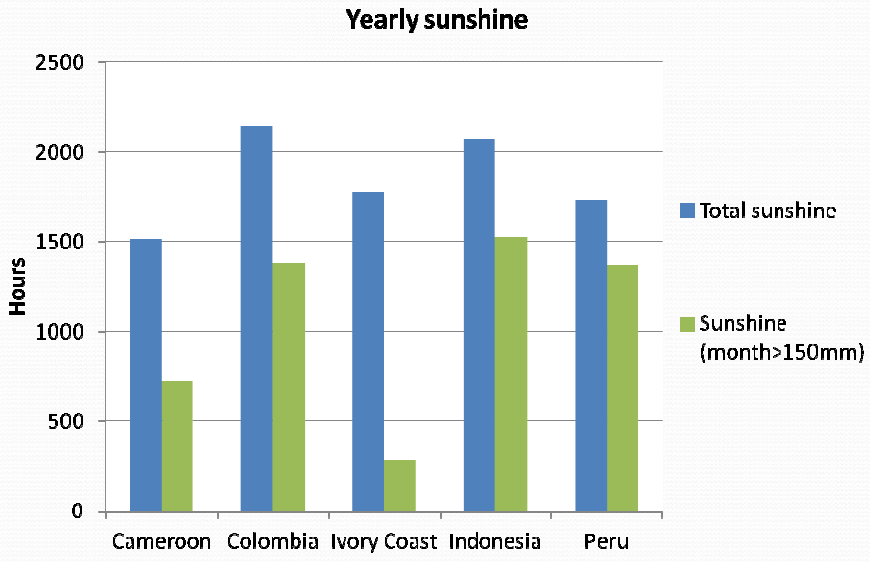
Why is there a yield gap?

Rainfall & sunshine distribution

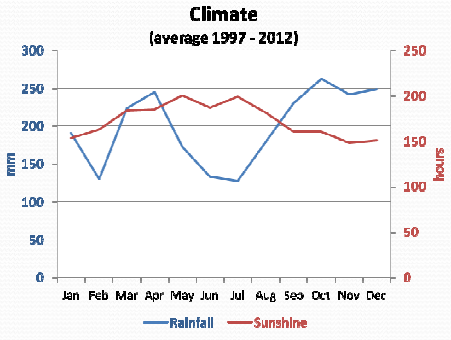


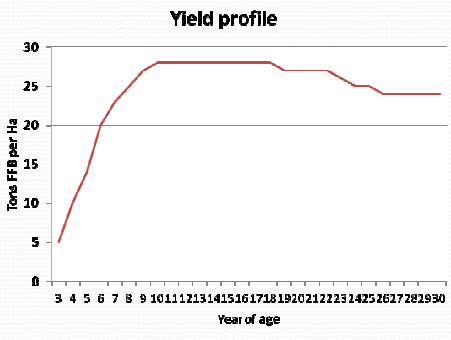
Source: SLARI (Sierra Leone Agricultural Research Institute)

Sunshine distribution

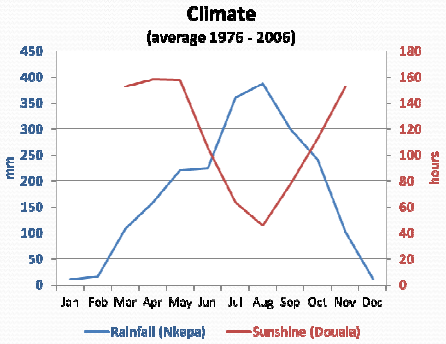


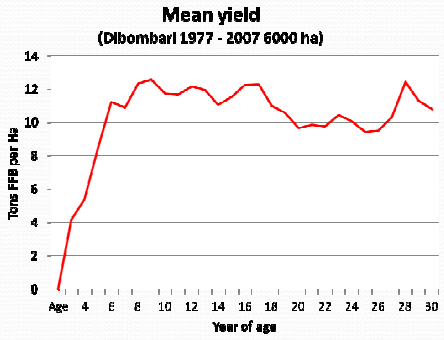
Climate and yield profile in Riau province (Sumatra)



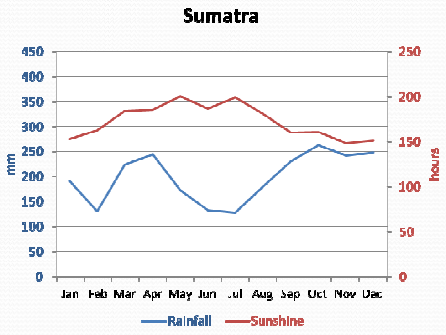


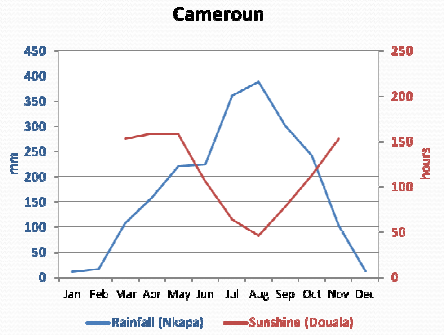
Climate and yield profile in Cameroon



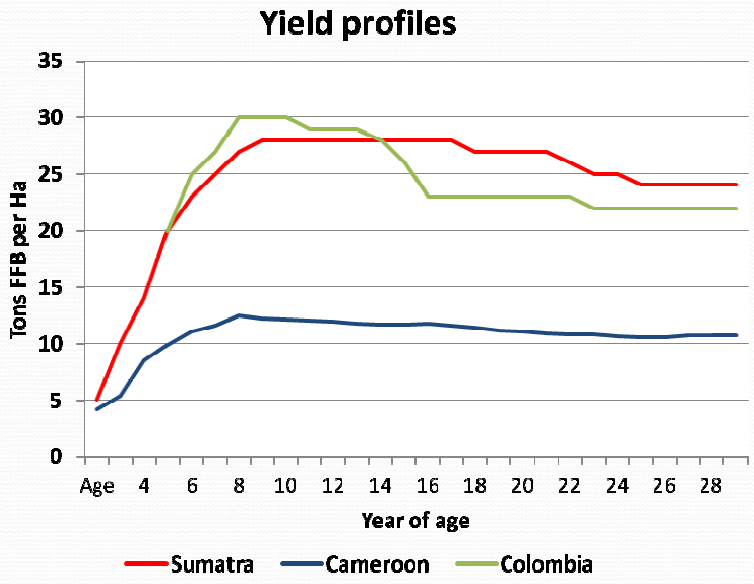


Rainfall & sunshine comparison Sumatra - Cameroun



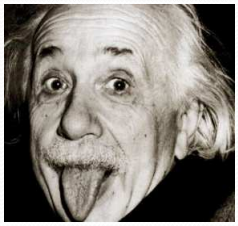


Yield comparison



Conclusion

African investors should go and grab land in south-east Asia where conditions are much better




Thank you for your attention